Title: Association between cord blood WBC, ESR, CRP and Neutrophil with neonatal sepsis in the first ten days of life of infants born in Kosar Hospital, Qazvin-Iran.

Background: Finding the most efficient biomarkers or combinations as predictors of early-onset neonatal sepsis is very important. But there is few review of such biomarkers detected in umbilical blood at birth. In this study we tried to find the most performing one or the most efficient combination of common inflammatory markers that might be potentially used as the earliest predictor of neonatal sepsis.

Methods: We evaluated 90 healthy term neonates with birth weight more than 2.5 kg without clinical features who were admitted in well baby ward until discharge of mother (Group I) and 90 neonates with clinical features suggesting sepsis or who had principal risk factors, e.g. prematurity (< 36 weeks), Low birth weight (< 2.5 kg), respiratory distress, meconium aspiration, maternal prolonged rupture of membranes or chorioamnionitis who were admitted in NICU (Group II). The role of each cord hematological parameters include white blood cell count (WBC), Neutrophil Count, erythrocyte sedimentation rate (ESR), and C-Reactive protein (CRP) in rapid diagnosis of neonatal sepsis were evaluated.

Results: The baseline characteristics (sex and weight) were similar in both groups. Mean of WBC, Neutrophil Count and ESR in cord blood sample of neonate in group I was statistically higher than neonates in group II (P> 0.05). There was no statistically significant difference between the frequency of leukopenia or leukocytosis in both groups (P> 0.05). The mean of CRP levels in cord blood sample of newborns in the group I and II was zero and 0.82±1.7, respectively (p=0.009).

Conclusion: None of the tests used alone or in combination were reliable as earliest predictor of neonatal sepsis. More researches focusing on the combination of different umbilical cord biomarkers in different clinical settings are needed to achieve clearer conclusions.

Keywords: Cord blood, Neonatal sepsis, Hematological parameters.